

C**MCQs with One Correct Answer**PROBLEM

The function defined by $f(x) = (x + 2)e^{-x}$ is *(1994)*

- (a) decreasing for all x
- (b) decreasing in $(-\infty, -1)$ and increasing in $(-1, \infty)$
- (c) increasing for all x
- (d) decreasing in $(-1, \infty)$ and increasing in $(-\infty, -1)$

SOLUTION

(d) $f'(x) = -(x+2)e^{-x} + e^{-x} = -(x+1)e^{-x} = 0 \Rightarrow x = -1$

For $x \in (-\infty, -1)$, $f'(x) > 0$ and for

$$x \in (-1, \infty), f'(x) < 0$$

$\therefore f(x)$ is increasing on $(-\infty, -1)$ and decreasing on $(-1, \infty)$.